THE EARLY YEARS

It is an irony of war that the comparative health of any military structure is often directly proportional to the ferocity of the struggle it is engaged in. Over four years of internecine conflict had raised the authorized strength of both Engineer corps from an 1861 high of 79 officers and 100 enlisted men, to 109 officers and 752 men by 1866. In that year the Philadelphia District (among others) was established as part of an organizational infrastructure necessary to expand and expedite the Corps' civil mission in the vacuum of activity created by the end of the war. We date the District from that year. Yet the Corps had been active in the area for over a century, its officers assigned directly from Washington or from West Point, and before that from whatever headquarters a Revolutionary army in flight could manage to establish.

On 31 July 1800, speaking prophetically of the Corps' expanding civil mission, Secretary of War James McHenry wrote that:

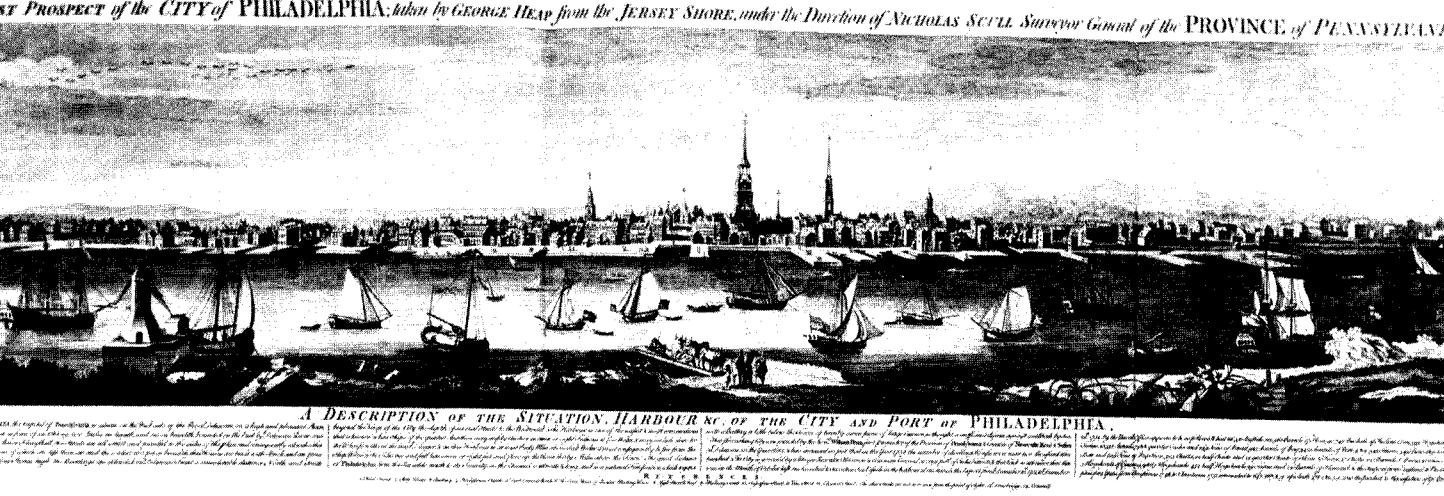
> *We must not conclude from these brief observations, that the service of the engineer is limited to construction, connecting, consolidating, and keeping in repair fortifications. This is but a single branch of their profession, though, indeed a most important one. Their utility extends to almost every department of war, and every description of general officers, besides embracing whatever respects public buildings, roads, bridges, canals, and all such works of a civil nature.*

But implicit in that statement is the recognition that the Corps' mission is first and foremost a military one — to practice the ancient martial art of defensive and offensive fortification, whereby the soldier's mechanical ingenuity is made to serve his tactical and strategic need. The designs and devices of engineers are firmly rooted in the cause of

James McHenry, 1753-1816. Born in Ireland; died at Baltimore, Md. American statesman and surgeon; joined the American Army in 1776 as Assistant Surgeon; secretary to Washington 1778-1780; Maryland Senator 1781-1786; member of Congress from Maryland 1783-1786, and of the Constitutional Convention in 1787; U.S. Secretary of War 1796-1801.

After a drawing by Charles B. J. F. de St. Memin, 1770-1852, property of the late J. F. McHenry.

—Library of Congress



An East prospect of the city of Philadelphia taken by George Heap from the Jersey shore, under the direction of Nicholas Scull, surveyor-general of the province of Pennsylvania. Engraved and published according to an act of Parliament by T. Jeffreys, near Charing Cross, 1768. —*National Archives*

military economy, both of money and of man power.

Recognizing that, Secretary McHenry reasoned that:

> *A slight attention to circumstances and the actual position of our country, must lead to the conviction that a well connected series of fortifications is an object of the highest importance to the United States, not only as these will be conducive to the general security, but as a means of lessening the necessity, and consequently the expense, of a large military establishment.*[1]

This chapter will follow the Corps' developing military mission in the Philadelphia area, from its early Revolutionary beginnings through the establishment of the District in 1866, to its enormous contribution in the fields of military construction and supply during World War II and the Korean Conflict. As Military Construction is the senior Corps mission, and as Supply's original provenance lies in the Quartermaster Corps, we will first examine that older branch's activities in the Philadelphia area, turning to Military Supply as its mission evolves.

THE *CHEVAUX-DE-FRISE* AND THE CABBAGE GARDEN

On 10 May 1775, with the cold war muddle of Massachusetts politics a month ablaze into revolution, the Continental Congress in session at Philadelphia appointed Richard Gridley (already besieging British forces in Boston) as the Grand Army's first chief engineer, at $60 per month. At 64, Gridley was one of the few officers available to the American cause with any real engineering experience. His record in siege tactics was impressive though acquired at the siege of Louisburg, thirty years before. While able, he was old, and his sympathies and competency were apparently questioned, though probably without foundation (he had Tory friends).

Nevertheless, On 5 August 1776 Congress appointed Lieutenant Colonel Rufus Putnam full Colonel and Chief Engineer, either supplanting or effectively diminishing Colonel Gridley's preeminent position.[2]

On the 17th of June, Washington had written to the Pennsylvania Committee of Safety concerning the building of a redoubt at Billingsport:

> *I have but one on whose judgment I should wish to depend in laying out any work of the least consequence. Congress will know my wants in this instance and several of my late letters to them have pressed the appointment of gentlemen qualified for the business.*

Finally, on 2 December, Congress legitimized the effort by authorizing Washington to raise "*a Corps of Engineers, and to establish their pay.*" This was easier said then done.

General Charles Lee had bitterly com-

Rufus Putnam, 1738-1824. Second Chief Engineer of the Revolutionary Army. Leaving that service, he fought at Saratoga and Stony Point. From 1796-1803 he was Surveyor-General of the United States.

—National Archives

Charles Lee, Esqr., 1731-82. Major General of the Continental Army in America. Mezzotint published 1775. C. Shephard. Despite his propensity to deride the military capacities of others, Lee was himself a military disaster: he was captured; secretly went over to the enemy; was exchanged; bungled his new command at Monmouth in 1778; and was finally court martialled, condemned and dismissed from the Army by Congress in 1780.

—Library of Congress

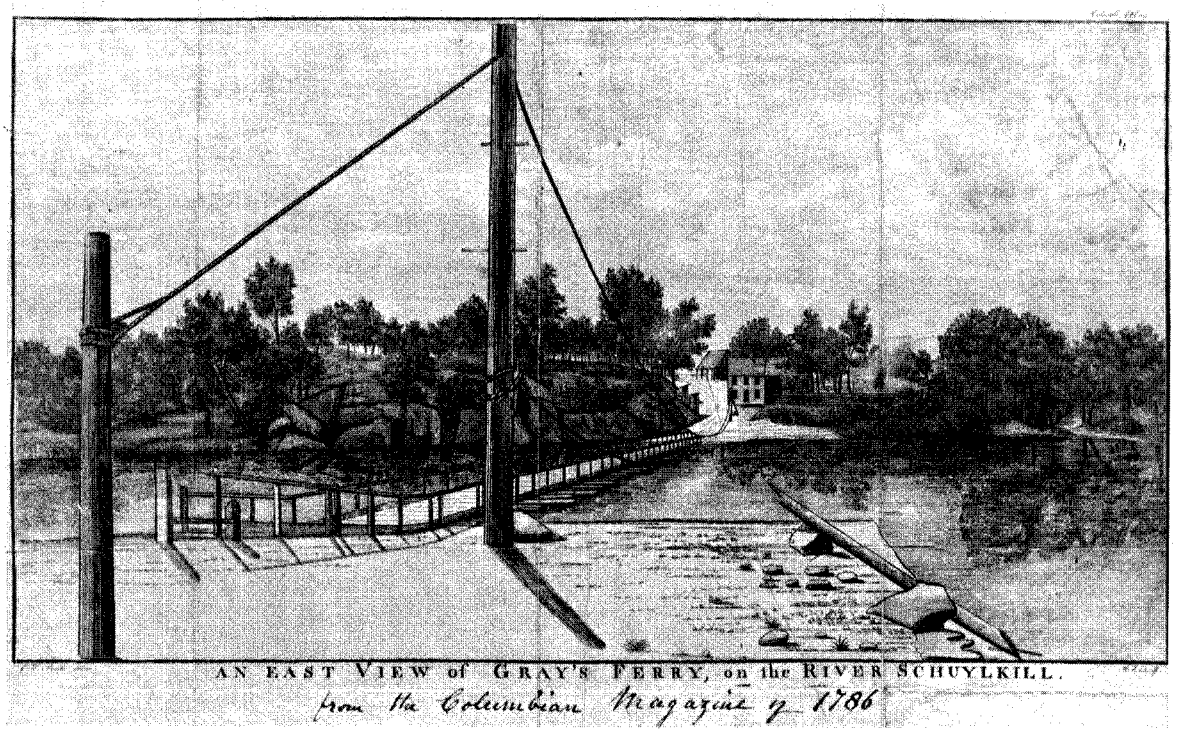
plained of the incompetence of American engineers, remarking that *"we had not an officer who knew the difference between a chevaux-de-frise and a cabbage garden."*[3] France, through the intercession of Franklin and Silas Deane, supplied the need, sending four French engineers led by the Chevalier Louis le Bégue de Presle du Portail. The Chevalier arrived on 17 June 1777 and was confirmed as Chief of the new Corps of Engineers on 11 July 1777 after a wait occasioned by the brief but fascinating ascendency of M. Philippe du Coudray who, arriving previously, had been accepted as the official French emissary and was already serving as Washington's chief engineer. An embarrassing pass, fortuitously resolved when du Coudray drowned while crossing the Schuylkill. It happened at Gray's Ferry where, against the advice of Yorkshire Ferryman George Gray, the rash Frenchman insisted on keeping a seat in the saddle while the boat was crossing the stream. Near the opposite bank, the frightened horse jumped over the gunwhale, drowning M. du Coudray and his ambitions.[4]

Taking command, du Portail mapped and laid out Washington's winter camp at Valley Forge, a job so skillfully done *"that Lord Howe refrained from attacking even when he knew the desperate condition of the troops behind them."*[5] Under his engineer's eye rose the Star and Stirling Redoubts and Forts Huntingdon and Washington, with their flanking line of breastworks.[6] Here du Portail established a practical Engineer School for the Corps, as the general orders of 9 June 1778 attest.

—*Library of Congress*

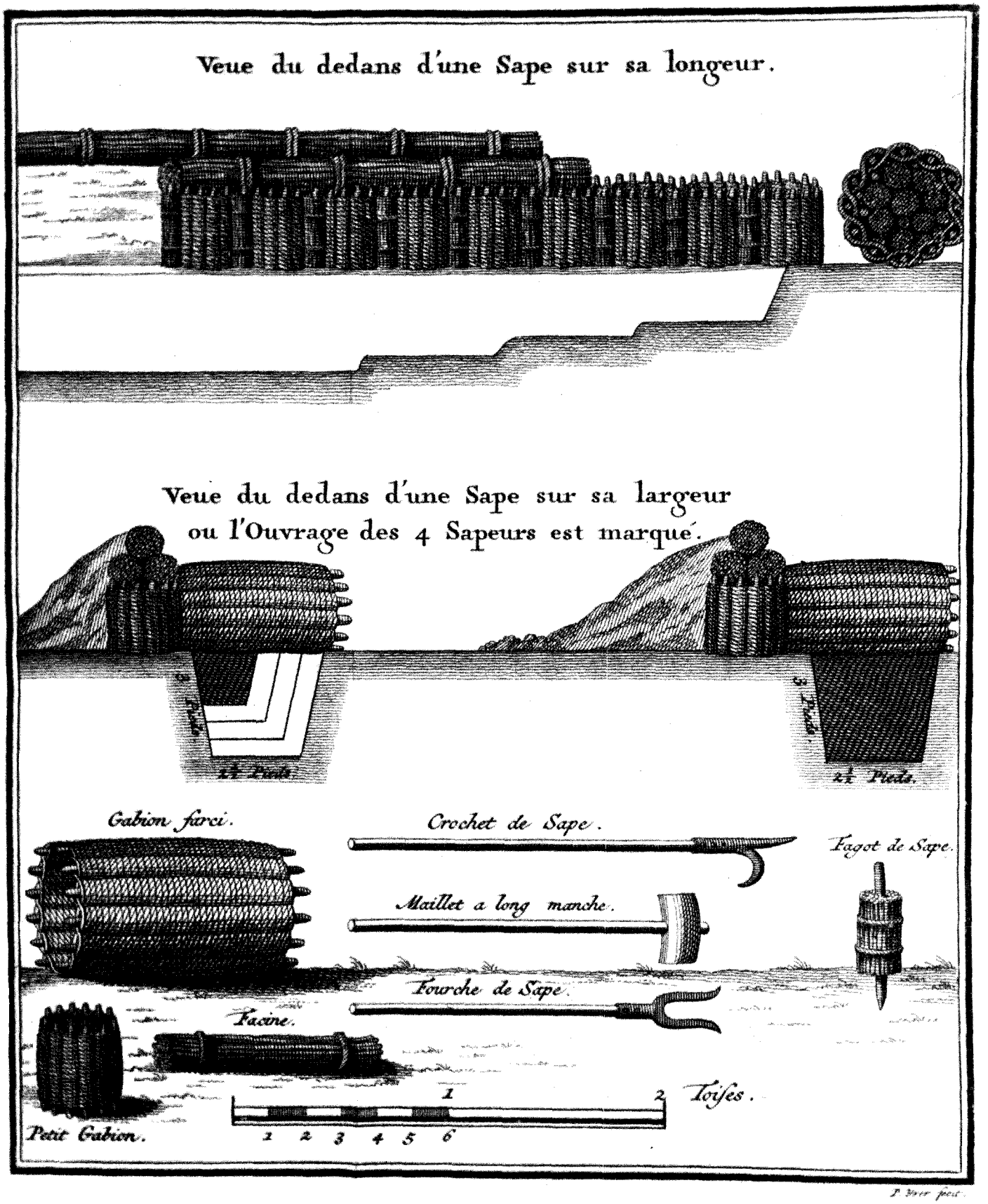
Sir William Howe, 1729-1814, Commander in Chief of the British Army in the American Revolution. Occupied Philadelphia in September 1777, but allowed the Americans to remain unmolested at Valley Forge. Was succeeded by Sir Henry Clinton in May 1778. From an English print, 1777.

—*Historical Society of Pennsylvania*



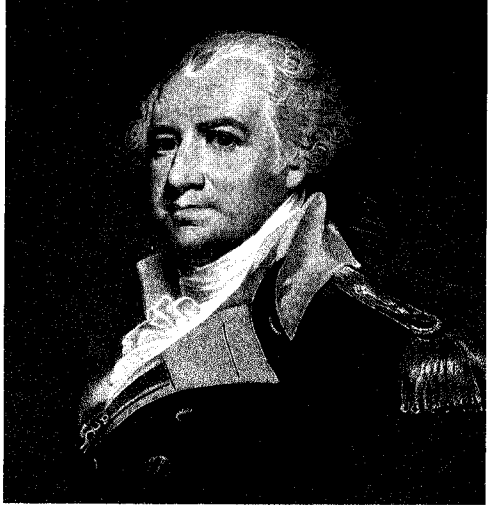
An east view of Gray's Ferry on the River Schuylkill. From the Columbian Magazine of 1786.

—*Free Library of Philadelphia*



View of a sap along its length, with a cross-section of the interior showing the work of the four sappers, and assorted items of engineer equipment. The gabions were woven baskets filled with earth or sand and assembled to form temporary fortifications. From Vauban's "Memoir pour servir d'instruction dans la conduite des sieges et dans la defense des places." Leiden, 1790.

—University of Pennsylvania



Thomas Mifflin, 1744-1800. Engraved by E. Welmore from a painting by G. Stuart. American General and political leader in the Revolution. Quartermaster-General of the Revolutionary Army at different periods during the Revolution, Mifflin resigned under the pressure of an investigation. Member of the Continental Congress 1774; Pennsylvania State Assembly 1778-79; member of Congress 1782-84; Delegate to the Federal Constitutional Convention 1787; First Governor of Pennsylvania 1790-1799.

—Library of Congress

Orders, General Headquarters, Valley Forge:

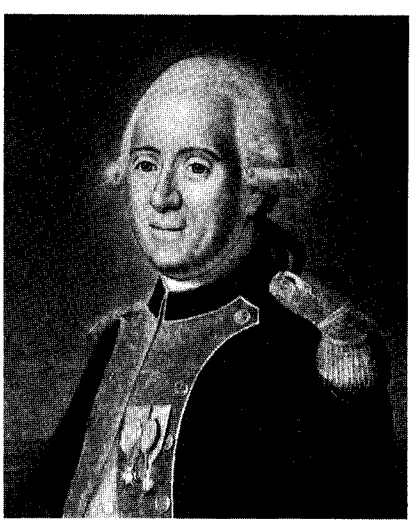
> *Three captains and nine lieutenants are wanted to officer the company of sappers. As the Corps will be a school of engineering, it opens a prospect to such gentlemen as enter it, and will pursue the necessary studies with diligence, of becoming engineers and rising to the important employments attached to that profession, such as the direction of fortified places, etc. The qualifications required of the candidates are that they be natives, and have a knowledge of the mathematics and drawing, or, at least, be disposed to apply themselves to those studies. They will give in their names at headquarters.*[7]

While Von Steuben drilled his troops in field exercise, du Portail taught fortification. From Valley Forge to Morristown, New Jersey, (site of Washington's winter quarters in 1779-1780) the engineer officers and their enlisted troops, the sappers and miners, built.

The years before Valley Forge had confronted both Washington and Congress with the unpleasant probability of a British assault on a virtually undefended Philadelphia. The river approaches were guarded by an earthen and timber fort on Mud Island, later Fort Island (the present Fort Mifflin, named after Governor Thomas Mifflin) and by Fort Mercer, opposite on the Jersey shore at Red Bank. Fort Mifflin had been begun in 1773, under the direction of John Montrêsor, a captain of the Royal Engineers who was to direct the eventual British assault on the

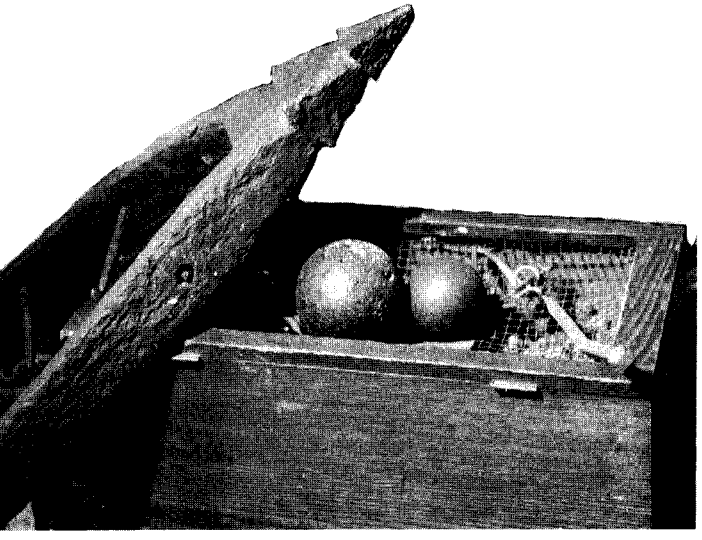
Colonel John Montrésor. British Chief Engineer in America during the Revolution.

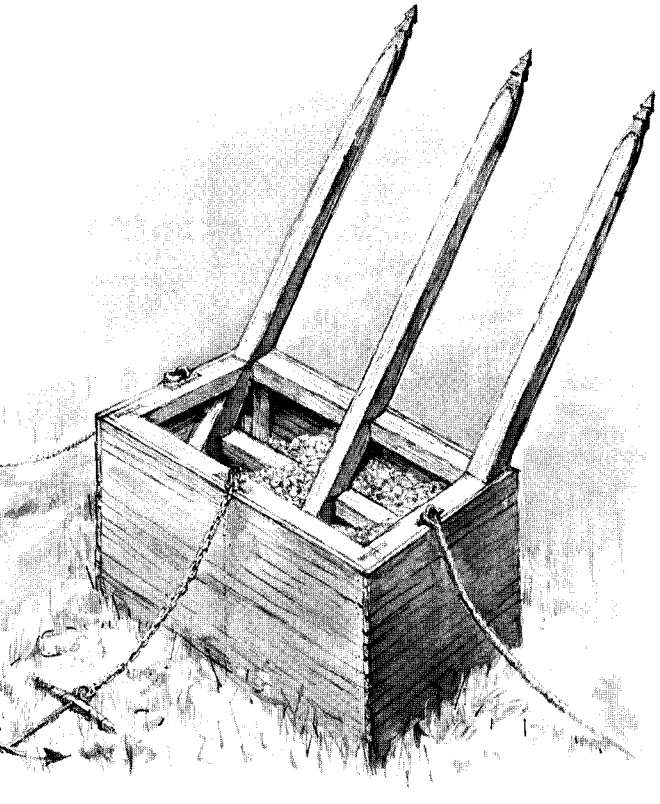
—Free Library of Philadelphia



Thomas Antoine Mauduit du Plessis, 1753-1791. Distinguished French soldier in the Revolutionary Army. He served as a Lt. Colonel and was noted for his bravery in engagements at Brandywine, Germantown and Monmouth.

—Historical Society of Pennsylvania





position. These defenses were augmented by five tiers of *Chevaux-de-frise*, (barbed wire or spikes attached to a wooden frame) sunk across the river at Fort Mercer, Hog Island, and Billingsport. With the exception of the Billingsport defenses, the cost of the work had been borne by the State of Pennsylvania, with Robert Smith, of the Carpenter's Company directing the construction of the *chevaux-de-frise.* In the month preceding the British assault on Philadelphia in September 1777, there was vigorous debate between Washington, his officers and the city fathers—stretching through the end of August—as to which line of defense ought to be strengthened. The British landward investment of the city on 26 September, made the argument academic, and the river forts themselves fell in November of that year, despite the efforts of du Portail's engineer officers Gaston Fleury and Mauduit du Plessis.[8] In June of 1778 the British abandoned Philadelphia. By October, Washington's correspondence reveals that he *"had sent General Portail to form a plan of fortification for the Delaware."*

This was however interrupted as the war shifted north and southward from the Delaware Valley.

Washington's engineer officers seem to have been particularly active in the bridging and fording of rivers, particularly the Schuylkill. In December 1776, Washington had ordered the river bridged at High Street Ferry. General Israel Putnam supervised its construction—a crude ponton structure, resting partly on rafts and partly on scows—and designed as a westward avenue of escape. When Washington was forced to abandon the city in 1777, the bridge was broken up and the scows hidden

REVOLUTIONARY

DELAWARE RIVER STOCKADES

LAST REMAINS OF THE REVOLUTIONARY DELAWARE RIVER STOCKADES, ESTIMATED AGE 300, IN THE RIVER 170.

CHEVAUX-DE-FRISE, FRENCH WORD, MEANING STOCKADE. AS PER DATE OF JULY 3, 1775 A COUNCIL OF SAFETY OF PFNNSYLVANIA WAS ORGANIZED IN PHILADELPHIA, OF WHICH BENJAMIN FRANKLIN WAS UNANIMOUSLY CHOSEN ITS FIRST PRESIDENT.

ON JULY 15, 1775 A COMMITTEE WAS APPOINTED TO VISIT THE PRINCIPAL INHABITANTS OF OLD GLOUCESTER COUNTY TO SOLICIT THEIR ASSISTANCE, AND AS A RESULT THEREFROM 296 PINE LOGS TO BE USED IN THE MAKING OF THE CHEVAUX-DE-FRISE WERE GENEROUSLY DONATED BY THE FOLLOWING MEN WHO LIVED NEAR THE DELAWARE RIVER FRONT, NAMELY, BENJAMIN WHITEALL, JOHN WOOD, NATHAN KINSEY, RICHARD JOHNS, DAVID PAUL, JOSEPH LOW, JAMES BROWN, JOSEPH WARD, JOSHUA HOPPER, ISAAC HOPPER, LEVI HOPPER, JAMES WOOD, JOSEPH TATEM, AND CHARLES WEST.

THE FIRST STRING OF CHEVAUX-DE-FRISE WAS SUNK AT FORT MIFFLIN.

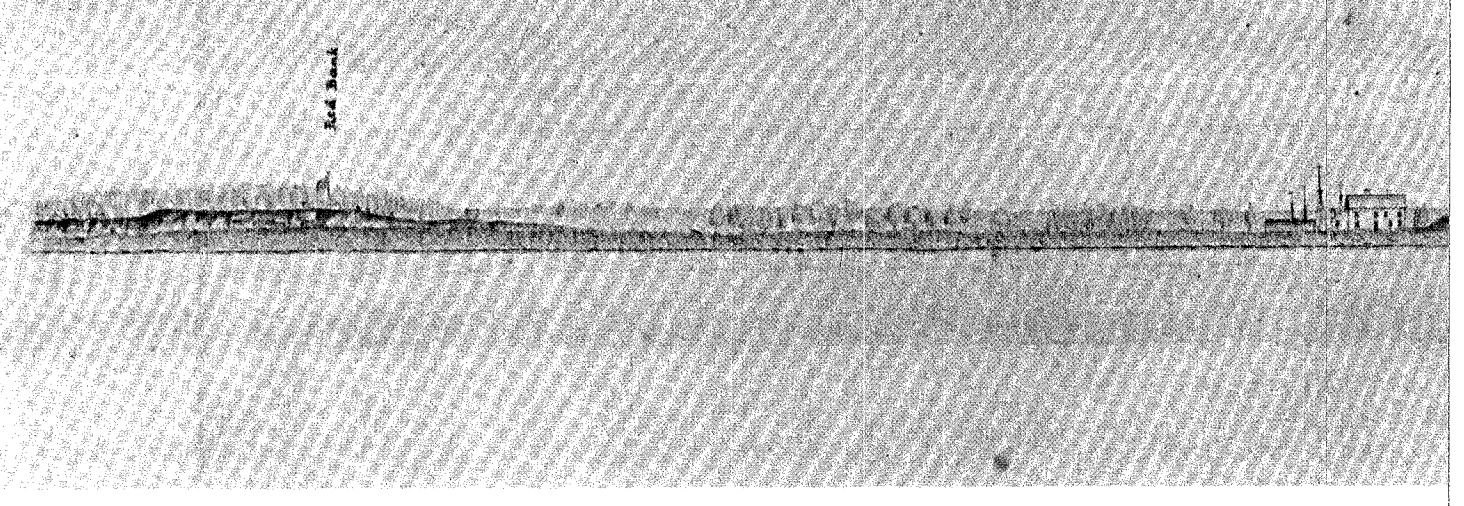
THESE FRAMES WERE BUILT FROM LOGS AS MUCH AS SIXTY-FIVE FEET LONG AND TWENTY INCHES SQUARE WITH TWO TO FOUR HEAVY TIMBERS EXTENDING THEREFROM AT AN ANGLE OF ABOUT 45 DEGREES WITH HEAVY IRON SNAGGED POINTS MADE BY BLACKSMITHS AND LINED WITH THIRTY THOUSAND FEET OF 2-INCH PLANK FLOATED OUT IN THE RIVER AT FORT MERCER AND FORT BILLINGSPORT AND SUNK WITH STONE AND HELD IN PLACE WITH ANCHORS AT A DEPTH OF ABOUT FOUR FEET BELOW LOW WATER MARK.

THESE TIMBERS, ANCHORS AND POINTS HERE ON EXHIBIT ARE THE LAST REMAINS TAKEN OUT OF THE DELAWARE NEAR FORT MIFFLIN IN 1936. THEY WERE INTHE RIVER 170 YEARS, ESTIMATED AGE 300.

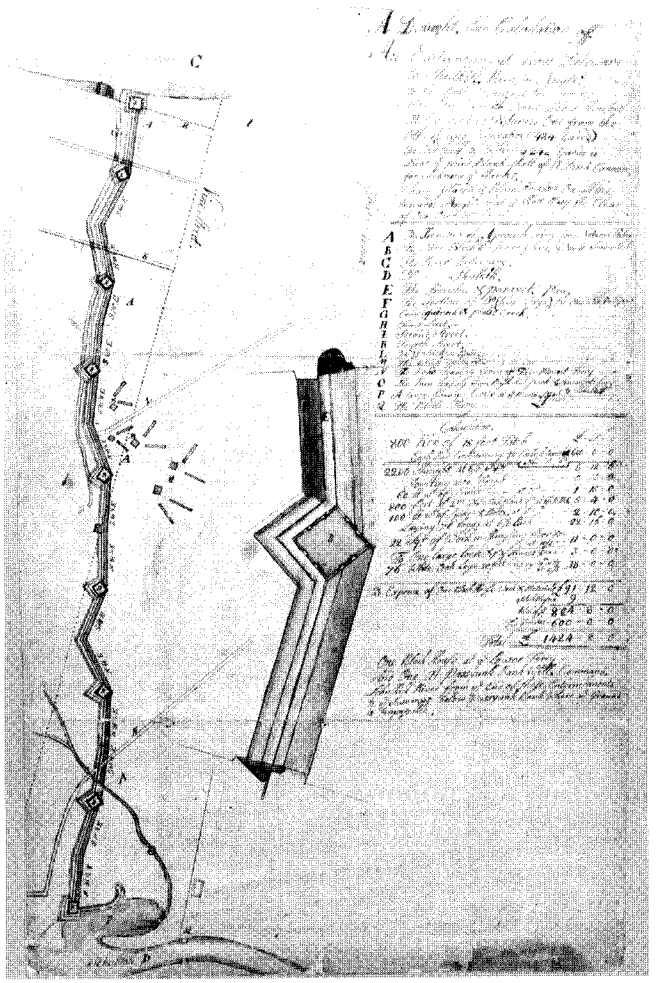
PRESENT DAY ARMY ENGINEERS ADMIT WITH ALL THEIR EQUIPMENT OF MODERN MACHINERY IT WOULD BE A MOST FORMIDABLE TASK.

THESE TIMBERS WERE PLACED ON EXHIBIT SEPTEMBER 25, 1946 BY THE COMMITTEE, NAMELY, HUGH L. MEHORTER, ALVIN S. CRISPIN, STANLEY MARTIN AND ROBERT LEE.

JAMES M. TURNER
FREEHOLDER



View of Mud Island before its reduction 16 November 1777, under the direction of John Montrésor, Esq., Chief Engineer in America,



Proposed entrenchments for the Defense of Philadelphia, from the Delaware to the Schuylkill River, near Vine Street. This 1777 schema was never realized, as the British took the city in late September.

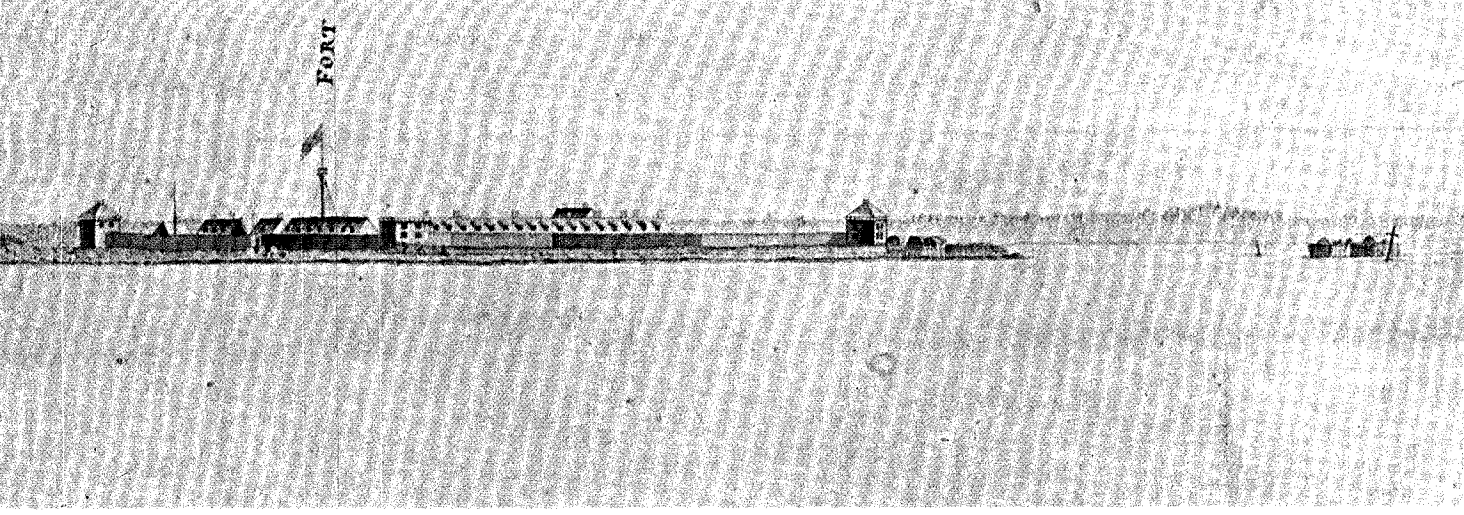
—Atwater Kent Museum, Philadelphia

along the river, where they were found by occupying British forces and the bridge reconstructed.

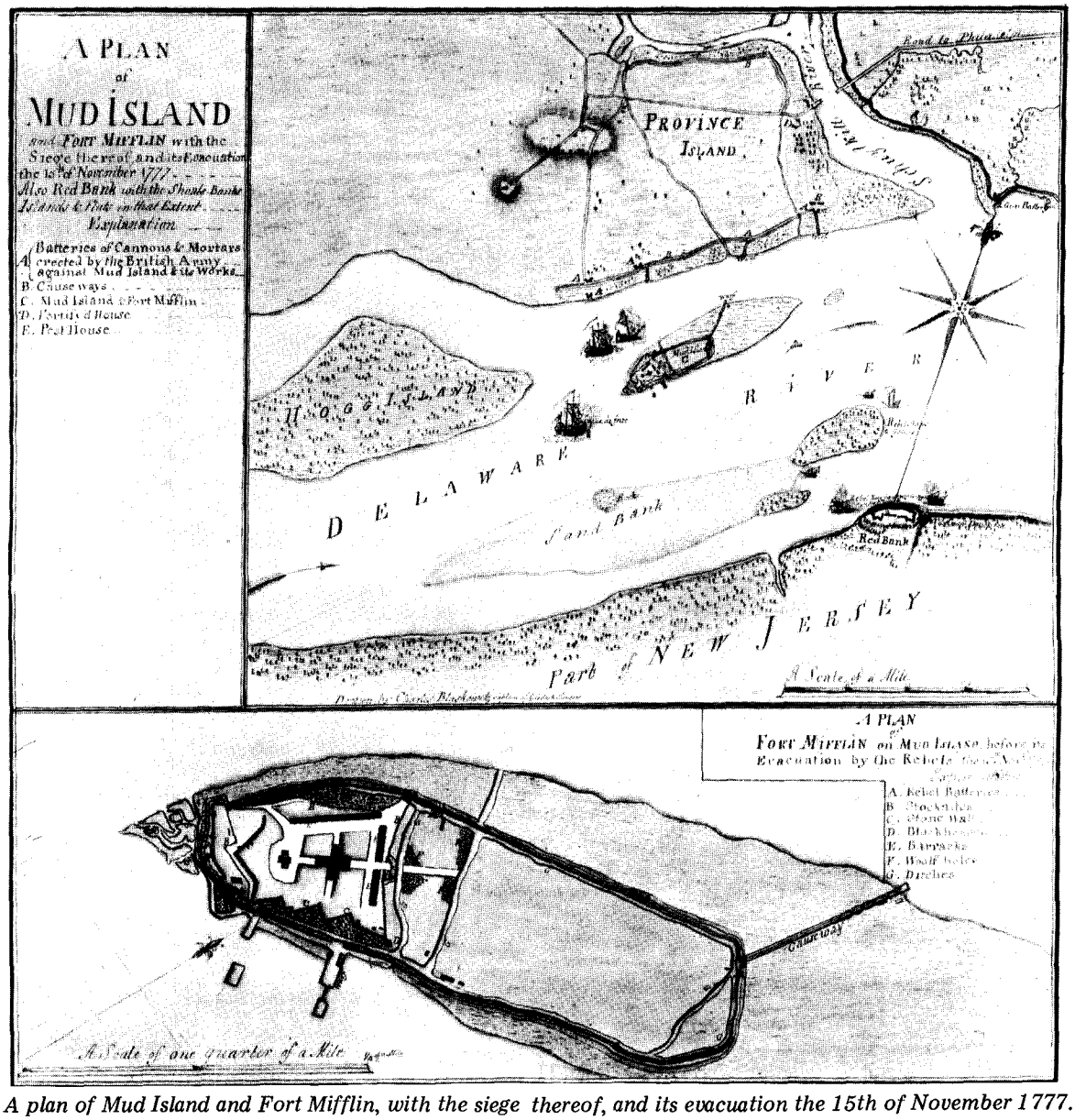
In December 1777, du Portail threw a shaky bridge of wagons topped with fence rails over the Schuylkill at Swedes Ford (below Valley Forge), to aid the American retreat to Valley Forge; there in early 1778, General Sullivan and his New Hampshire Militia again crossed the river with a log bridge, each pier of which was decorated by the General with a memorial to a Revolutionary leader, with Washington at the center. Though sturdily built, it could not hold against the fast Schuylkill current, and within a few months, the ice swept it away.[9]

Major General John Sullivan.

—National Archives



taken from the dyke in front of the six gun battery on Carpenter's Island. Watercolor by Pierre Nicole, 1777. —*Library of Congress*



A plan of Mud Island and Fort Mifflin, with the siege thereof, and its evacuation the 15th of November 1777.

—*Yale University*